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KAY

Put CATV performance to the test...

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ORDERING INFORMATION

All orders and quotation requests may be sent either to the Santa Barbara or South Bend offices or directly to our main office in Pine Brook, New Jersey. Terms are net 30 days; cash discount ½% 10 days. Replacement parts are net 30 days. Shipments are made on open account where credit has been established, against payment in advance when ordered, or C.O. D.

General instrument prices include a standard cabinet and operating and maintenance manuals describing the equipment. Other accessories necessary for basic operation of the instrument, such as sonagram paper, are supplied as specified in this catalog. Power supplies are arranged for 117 volts; line frequency must be specified. In many instances, these supplies can be modified to suit your needs at an additional cost.

Prices and specifications are subject to change without notice. Instruments are packed and shipped via UPS unless otherwise requested.

REPAIRS

A stock of spare parts is maintained and is available to our customers. A $5 parts order processing charge applies to all orders. The factory will repair at no charge equipment which, in our opinion, is covered by our warranty; and at standard rates in cases which, in our opinion, are not covered by our warranty. Permission to return equipment should, in every case, be obtained from the nearest Kay office or main office before equipment is returned.

Unless instructed otherwise, repairs less than 20% of unit cost (or $60), are accomplished and billed without specific price authorization. Service facilities are maintained in California to facilitate repairs in the West. Shipping addresses –

In New Jersey

Kay Elemetrics Corp.
12 Maple Avenue
Pine Brook, New Jersey 07058
201-227-2000

In California

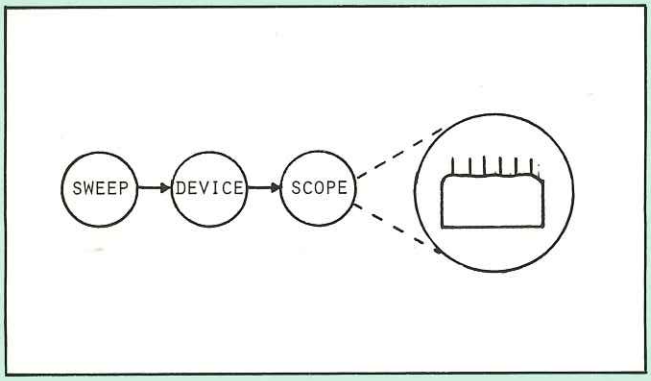
Kay Elemetrics Corp.
7136 Owensmouth Avenue
Canoga Park, California 91303
213-883-4610

SUMMATION SWEEPING

In general production line set-ups, all cable, amplifiers, and passive devices such as splitters, couplers, etc., are sweep tested for measurement of frequency response. When systems originally receive this same equipment, these measurements may be repeated prior to installation. During these tests, instrumentation is set-up with the sweeper in a line lock or continuous sweep function. Once installed in the system, however, the overall picture may become quite different and it is therefore required that the system be remeasured and realigned for overall performance.

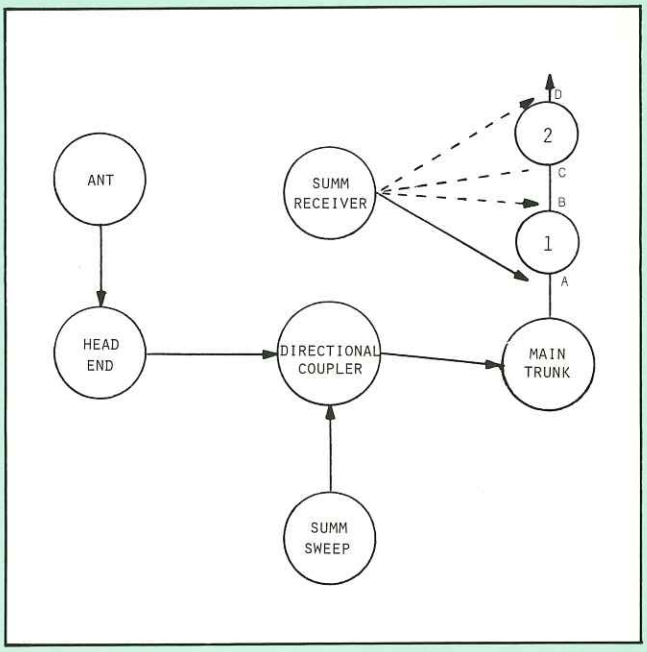
After initial installation, before the drops are in, the system may be swept in a continuous mode; however, once on the air, this type of testing must be avoided for subscriber interference reasons. To measure response of a live system the operator must sweep test under one of the following conditions: (1) during short intervals, (2) below the video levels or, (3) at night. The latter increases payrolls and decreases subscriber time. Sweeping below signal levels requires highly specialized, unproven, expensive test instruments. Summation sweeping, with the proper equipment, yields very useful outputs, at a reasonable cost.

The summation sweep itself covers the entire VHF range in about a 2 millisecond burst rather than a continuous sweep. This allows test signals to be transmitted thru the CATV system in a period which approximates only two lines of video information. With a suitable receiver, such as the Kay 9000AS series, the overall response can be displayed, retained and compared at points throughout the system. The display itself features a split-screen storage scope with various plug-ins, including the summation receiver, described on page 1.



SWEEP TEST SET-UP

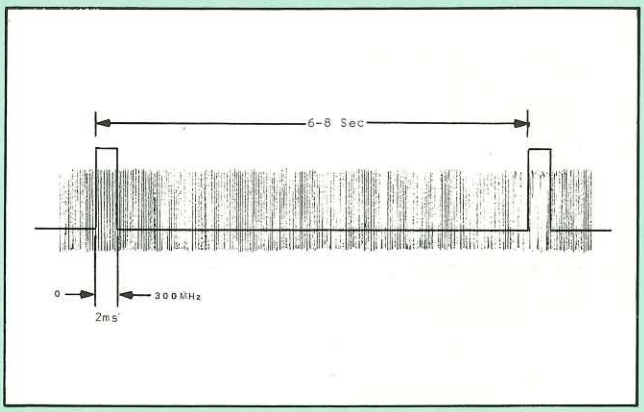
The Kay summation package offers a variety of sweepers which may be utilized at the head-end. Of these, the Model P9059 has been designed specifically for system sweeping. It may be mounted directly in the head-end in its modular format (with the power supply installed in the head-end rack, the sweeper plug-in, itself, may be used for other purposes described later) as a semi-permanent fixture. The test signal may then be directly coupled to the main trunkline via a directional coupler as shown in fig. 2.



The receiving test set may be used in a mobile set-up or in permanent installation if a closed-loop system is employed. In general it may be used at any point in the system where a FSM would be employed. With its split-screen feature, it is possible to display either single swept responses or input-output comparisons (e.g. A-B, Fig 2) or amplifier to amplifier output comparisons (e.g. B-D, Fig 2). A check between points B-C would, of course, indicate any cable discontinuities. (A low-cost camera attachment permits filing of these tests for proof of performance.)

EFFECTS ON PICTURE QUALITY

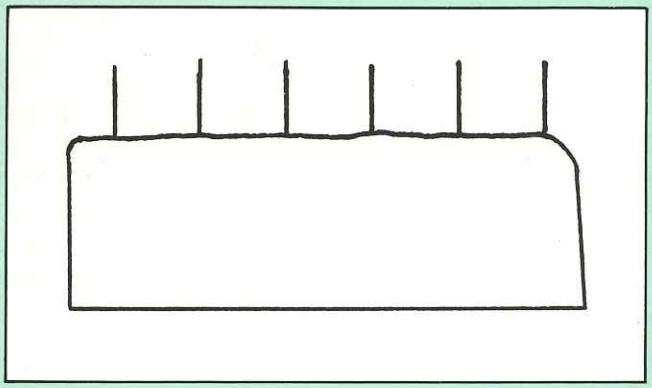
The system is set up as follows: At the point of injection, the sweep is set up to cover the VHF-TV band (or subband if an upconversion is used or two-way system is analyzed). The RF output is adjusted for a level 12 db *above* the TV signal, which means that the test signal does override the video information. However, the entire VHF sweep is contained in a 2 MS burst and with the storage feature of the Kay receiver it is possible to transmit the sweep every 6-8 seconds, virtually eliminating interference. Conventional long persistence CRT's require a much faster rep rate thus increasing the interference.



EASE OF OPERATION

With a brief review of what the response trace means, even an inexperienced technican can perform the sweep test. Once the summation sweeper is set-up (permanently), receiver adjustments are basic: Power on-off, Trigger Controls, Attenuators. Tilt should be preset. Markers are optional.

A. *ATTENUATORS* for peak-to-peak valley calibration
B. *TRIGGER* controls for sweeper/receiver frequency synchronization
C. *MARKERS* for frequency indicators
D. *TILT* control for drop cable compensation (Should be precalibrated with same cable for all tests.)

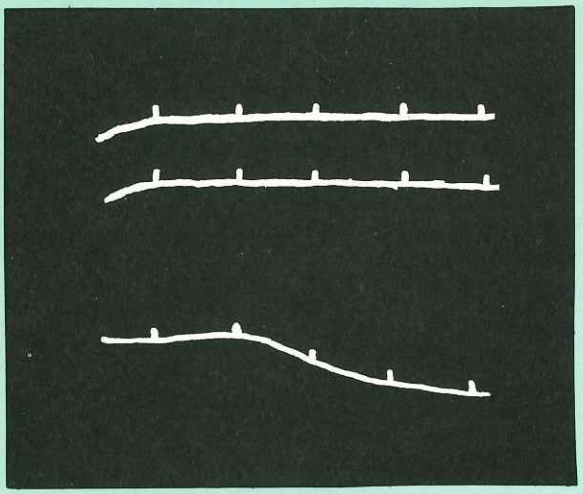


TEST SET VERSATILITY

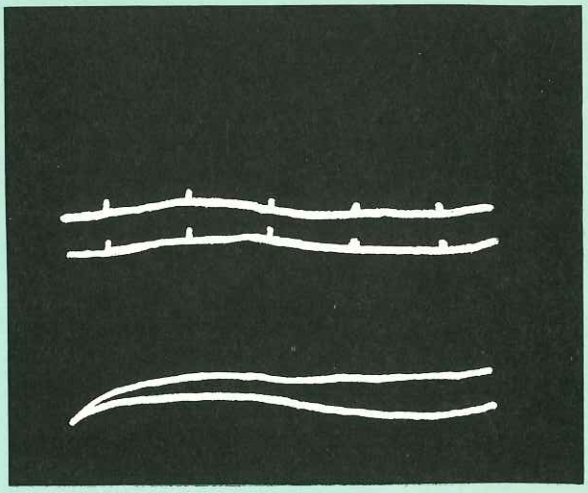
The *P9059* sweeper module, which mounts in the head-end rack, can be removed from that fixture and be installed directly in the 9000AS scope mainframe which normally houses the summation receiver *P9020.* So if inclement weather forces the technican inside, the sweep/scope set-up can be used to align or repair amplifiers . . . .

. . . . and the *P9030* module plugs in the same slot for return loss measurements and includes a 40 db return loss bridge . . . .

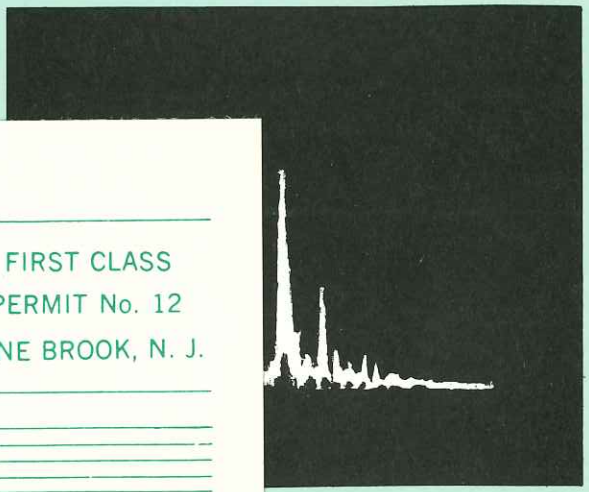
. . . . and the low cost *P9040* spectrum analyzer can be installed in the same mainframe. It gives 1 KHz resolution, 70 db down, and it's phase-locked for critical narrow band testing.



I DB SWEEP REFERENCE STORED ON UPPER PORTION OF SPLIT SCREEN DISPLAY
FREQUENCY RESPONSE OF SYSTEM TEST POINT DISPLAYED ON LOWER PORTION



LOWER PORTION OF SPLIT SCREEN, DISPLAY OF EFFECT OF AMPLIFIER ADJUSTMENT



PLAY OF CARRIER
AND FM BAND
PECTRUM ANALYZER
SPLAY

FIRST CLASS
PERMIT No. 12
PINE BROOK, N. J.

BUSINESS REPLY CARD

No Postage Stamp Necessary if Mailed in The United States

Postage Will Be Paid By:

KAY ELEMETRICS CORP

MAPLE AVENUE
PINE BROOK, NEW JERSEY 07058
ATTENTION: JIM CONNORS, SALES MGR.

EFFECTS ON PICTURE QUALITY

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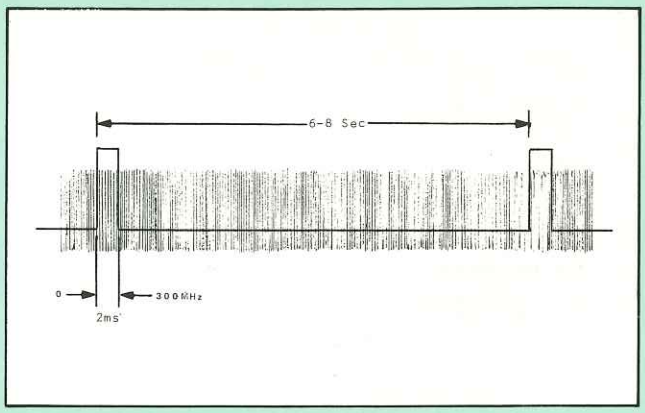

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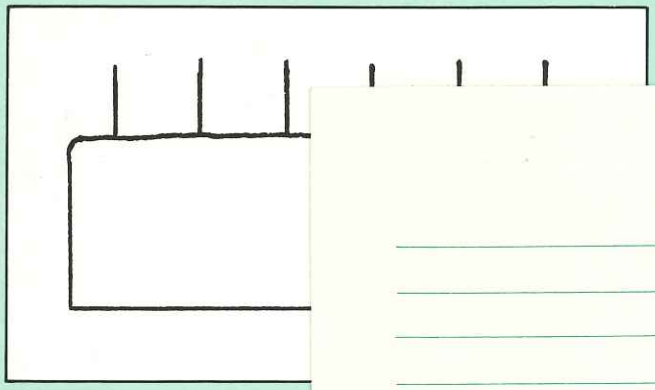
C. *MARKERS* for frequency indicators
D. *TILT* control for drop cable compensation (Should be precalibrated with same cable for all tests.)



The *P9059* sweeper mo
head-end rack, can be r
and be installed directly i
frame which normally
ceiver *P9020.* So if incl
technican inside, the sv
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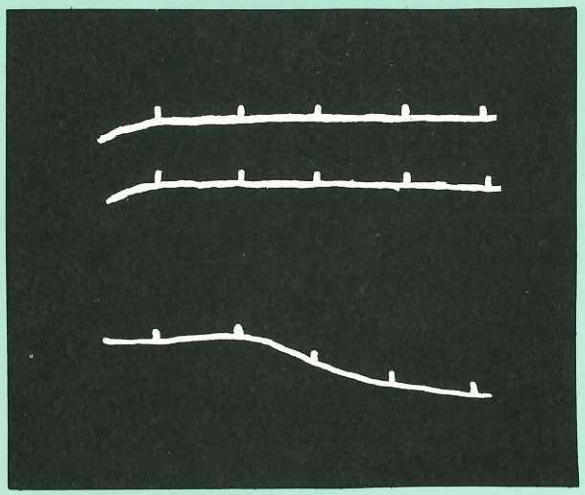
NAME _____

DEPT. _____

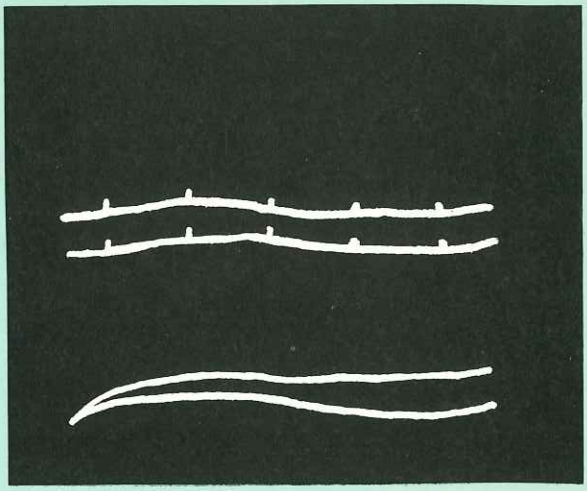
FIRM _____

ADDRESS _____

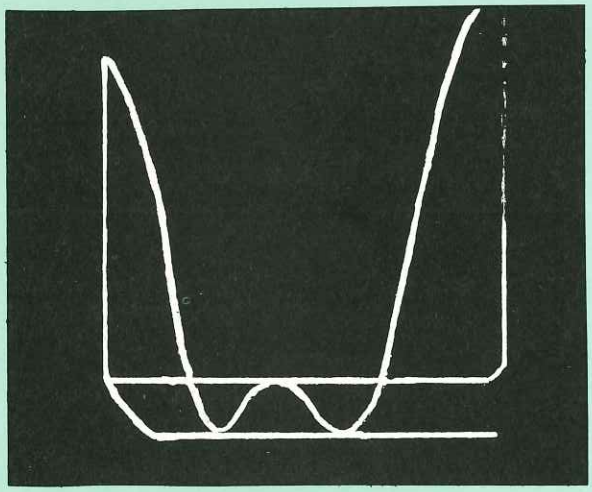
CITY & STATE _____ ZIP _____



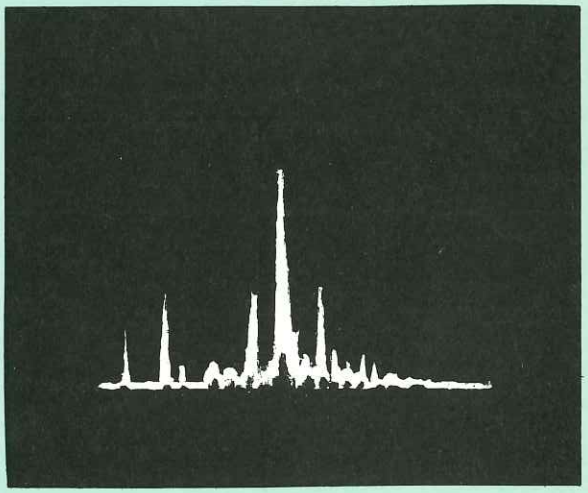
1 DB SWEEP REFERENCE STORED ON UPPER PORTION OF SPLIT SCREEN DISPLAY
FREQUENCY RESPONSE OF SYSTEM TEST POINT DISPLAYED ON LOWER PORTION



LOWER PORTION OF SPLIT SCREEN, DISPLAY OF EFFECT OF AMPLIFIER ADJUSTMENT



EXAMPLE OF 36 DB RETURN LOSS USING 9030 CABLYZER PLUG-IN FOR 9000AS DISPLAY



SPECTRUM DISPLAY OF CARRIER FREQUENCIES AND FM BAND USING 9040 SPECTRUM ANALYZER FOR 9000AS DISPLAY

9000AS/9020A SUMMATION RECEIVER

- ☐ LOW COST TEST SETS FOR SYSTEM AND BENCH
- ☐ PLUG-INS FOR RESPONSE, GAIN, RETURN LOSS
- ☐ SPLIT SCREEN STORAGE DISPLAY

The 9020 Summation Sweep Receiver is designed to test CATV system frequency response for flatness and bandwidth. When used in conjunction with the Kay model P9059 the unit provides display of these system parameters with minimal interference to the subscriber TV picture.

In the internal trigger mode, the receiver will trigger on the leading edge of the system frequency response. A front panel switch provides selection of the external trigger mode, which enables the operator to trigger the receiver with a signal supplied from the video output of the field strength meter. The detected envelope, of the system amplitude vs frequency response, is displayed on the 9000AS storage CRT. System flatness is quickly determined by use of the built in 41 db precision attenuator. System bandwidth is easily identified by the built in 5 & 50 MHz harmonic comb markers. A switch controlled filter is incorporated in the unit, to eliminate noise on the display caused by the carrier frequencies mixing with the P9059 sweep signal.

The split screen storage feature of the display enables the operator to store a reference response on the upper half of the CRT and the system test pattern on the other half. (A Polaroid camera attachment is available for obtaining permanent photo record of system performance.)

9020

INPUT SENSITIVITY: Optimum—5 mV RMS, Min.—1 mV RMS
Has built-in 6 step (41 db max) attenuator to enable operation to 1.0 V RMS input max.
INPUT IMPEDANCE: 75 ohms
TRIGGERING RATE: to 375 SWP/SECOND
RF AMPLIFIER: 40 db gain ±0.5 db, 0.5—300 MHz
FREQUENCY MARKERS: Pulse type picket fence markers every, 50 MHz, every 5 MHz; 50 MHz markers are twice the amplitude of 5 MHz markers for easy identification.

PRICE: $595.00

9000AS

DISPLAY: Split screen storage
STORAGE TIME: 3 hrs
POWER REQUIREMENTS: 115 VAC @ 85W
WEIGHT: 37 lbs

PRICE: $1600.00

P9059A SUMMATION SWEEP TRANSMITTER

The new P9059 sweeping oscillator has been designed especially for CATV System testing. This compact unit generates a high level +60 db mv output to insure adequate level to the system after coupler attenuation. The sweep duration is variable from 2 ms to 15 ms for summation sweep testing of the system, with minimum interference to subscribe TV picture. Summation sweep rep rate is continuously variable, allowing the operator to select a rate which is slow enough to minimize interference, while fast enough, when used with Kay 9000AS storage scope, to allow convenient display tilt and gain adjustments, made by the system technician. The CW output mode is provided for ease in setting optimum sweep carrier level and is also useful as a field strength meter calibrator.

System bandwidth is quickly set using the digital start-stop frequency dials on the P9059. The unit may be ordered with the optional 41 db precision attenuator and optional frequency markers at nominal additional cost. Output level is held constant to ±0.25 db with a fast response internal ALC system to insure the maximum accuracy in measurement of systems frequency response.

While field testing is the 9059's primary function it leaves little to be desired as an, in shop, test bench sweeper. The 5 to 300 MHz frequency span and the 60 dbmv output provide the flexibility needed in a wide range of sweep test applications.

FREQUENCY RANGE: 1–300 MHz
SWEEP WIDTH: 300 MHz
RF OUTPUT: 1 VRMS
FLATNESS: ±0.25 db
HARMONIC & SPURIOUS DISTORTION: 30 db down
DIAL ACCURACY: ±2% of max. freq.
LINEARITY: (as % of straight line) 1%
DRIFT, SHORT TERM: (5 min.) 50 KHz
DRIFT, LONG TERM: (with 2 min. settling time) 300 KHz
RESIDUAL FM: 3 KHz

SWEEP MODES: external, CW, variable (0.1–5 Hz and 1–50 Hz)
SCAN RATE: 2–5 ms
ATTENUATION: RL level control 6 db var.
OPTIONAL ATTENUATION: 41 db in 1 db steps
OPTIONAL INTERNAL MARKERS: 5 & 50 MHz harmonic birdie type, individually switched
POWER REQUIREMENTS: 115 Vac @ 25W
DIMENSIONS (W-H-D): 8 3/8 x 5 3/4 x 13 7/8 inches
WEIGHT: 11 lbs.
PRICE: $695.00, $90.00 Attenuator, $125.00 5 and 50 MHz comb markers

9030 GAIN/LOSS RETURN LOSS

☐ 36 DB RETURN LOSS MEASUREMENTS

☐ 0.2 DB ACCURACY

The Kay 9030 Cabl-yzers provide a low cost straight forward method of computing gain loss and return loss measurements. This, along with built in electronic switching (PIN diode), precision, stepped attenuation, enables the operator to achieve measurement accuracies of 0.2 db in gain and loss tests. Return loss measurements of 36 db are possible due to the high gain amplifier incorporated in these plug in's. Ease of operation and elimination of error, induced by complex hook-up cabling, make for a very valuable tool for testing all CATV system components.

The 9030A includes two precision miniature attenuators which provide level control of 0.25 db to 65.75 db in 1/4 db increments. This unit also comes fitted with our 989A return loss bridge with the 986 and 987 as options.

The 9030ADR plug-in offers the 987A as its standard bridge. Attenuation is handled by 2 sets of rotary attenuators which yield 80 db of control in 1 db steps. The placement and design, of the four rotaries used, offers a digital display of the selected Attenuation Level.

FREQUENCY RANGE: 5—1000 MHz
VSWR: ⩽1.2:1 overall
CROSS TALK: >50 db down
SWITCHING RATE (EXTERNAL): 0.2 to 200 Hz
RETURN LOSS BRIDGE*, STANDARD
9030A: 989A
9030ADR: 987A
OPTIONAL
9030A: 986A & 987A
9030ADR: 986A & 989A

ATTENUATION, GAIN/ATTENUATION, LOSS
9030A: In-line 62.75 db in 0.25 db steps
9030ADR: 2 rotaries 80 db in 1 db steps
ATTENUATOR ACCURACY
9030A: 1% of indicated db
9030ADR: 1% ±1 db overall

PRICE
9030A: $595.00
9030ADR: $665.00

*See page 22 for Return Loss Bridge specifications

P9040A 300 MHz SPECTRUM ANALYZER

☐ 0.5 to 300 MHz

☐ PHASE LOCKED

☐ FREQUENCY & AMPLITUDE CALIBRATION

The Kay P9040 Spectrum Analyzer has been developed especially to meet the stringent CATV test requirements. The entire unit, from its DBMV calibrated level indicator to its automatic, narrow dispersion phase locking (for improved resolution, thus ease in cross modulation checking) has been built with your needs in mind. The units' broad 0.5 to 300 MHz frequency range, 70 db dynamic range and its 10 KHz to 30 MHz, per division, variable dispersion provide the flexibility needed for a wide range of test application.

Ease of operation is insured with the direct reading of level in DBMV, and digital display of frequency.

Crystal generated harmonic markers are incorporated for frequency calibration. An automatic phase lock system is added to provide the stability needed for those critical narrow band tests, such as determining cross modulations levels and bandpass filter responses.

While there are any number of devices, that will provide a system noise or fault indication; the 9040 will not only provide the indication, it gives the amount, type and frequency. In other words, the kind of information necessary for a full assessment of system problems.

FREQUENCY RANGE: 0.5–300 MHz
DISPERSION (SPECTRUM WIDTH): 10 KHz/Div to 30 MHz/Div (Automatic Phase Locking at dispersions below 100 KHz available)
DYNAMIC RANGE: 70 db
FLATNESS: ±1 db (0.5–300 MHz width)
RESOLUTION FREQUENCY: 1 KHz, 100 KHz & 1 MHz switchable
AMPLITUDE: ±1 db

SENSITIVITY: –40 dbmv (min. input signal)
IMPEDANCE: 75 Ω
VERTICAL SCALE: 2 or 10 db/Div switchable
FREQUENCY CALIBRATION: Crystal Calibrated
IF ATTENUATION: Digital readout continuous by variable to 0.1 db
RF LEVEL CALIBRATION: Builtin +30 dbmv level calibration

PRICE: $2390.00

159E 300 KHz—300 MHz SWEEP

☐ EXTREMELY FLAT

☐ LOW HARMONIC CONTENT

☐ SUMMATION SWEEP OPTION FOR CATV

The Kay Model 159E sweep and marker generator is the best VHF sweeper on the market. This new, improved version now offers a full volt RMS output into either 50 or 75 ohms. New low frequency coverage goes down as far as 300 KHz with the upper limit maintained at 300 MHz.

Similar to previous models, the 159E features swept outputs which are held flat to within ±0.25 db over the entire bandwidth. Harmonic and spurious responses are at least 30 db down.

NEW SUMMATION SWEEP OPTION

An optional, low cost, summation sweep module is now available for use with the 159E for complete testing of CATV systems. The feature allows sweep tests of systems without interfering with subscriber service. The 159E in this mode is set up at the head end to sweep the full band in a 2MS burst. The repetition rate is set so that it replaces only a few lines of video information. A new scope receiver is now available from Kay for receiving these signals at points down the line.

In addition to the summation trigger, the standard operating modes of the 159E have been maintained. These characteristics include line lock, variable rates from .01—1000 Hz, manual sweep, CW, and external modulation. A built-in attenuator, RF detector, RF output meter, digital frequency readout, and external ALC are included in the sweeper. A full complement of low cost fixed or variable, pulse or birdie markers are available.

FREQUENCY RANGE: 300 KHz—300 MHz
SWEEP WIDTH: 200 KHz—300 MHz
RF OUTPUT: 1 VRMS
FLATNESS: ±0.25 db
HARMONIC AND SPURIOUS DISTORTION: >30 db down
RF ATTENUATOR: 79 db in 3 db steps, Plus 6 db variable
ATTENUATOR ACCURACY: 0.5 db
(At Full Attenuation)
DIAL ACCURACY: 2%
LINEARITY: (as % of straight line) 1%
EXTERNAL FM: ±6 volt p-p, dc—20 KHz signal for full sweep width
EXTERNAL AM: 70% at 5 KHz, 50% at 10 KHz
DRIFT, SHORT TERM: (5 min) 50 KHz
DRIFT, LONG TERM: (with 2 min settling time) 300 KHz
RESIDUAL FM: 3 KHz
SWEEP MODES: Line lock, 0.01—1000 Hz variable, Ext. MOD, CW, manual (summation sweep optional)
BLANKING: Switchable zero volt reference during retrace
OPTIONAL MARKER PLUG-INS: PM7660, PM7670, PM300
POWER REQUIREMENTS: 115 VAC @ 25W
WEIGHT: 28 lbs.

PRICE: $995.00

160KE 500 KHz—500 MHz SWEEP

☐ **FULL RANGE SWEEPS TO 500 MHz WIDE**

☐ **PRECISION ATTENUATORS AND RF DETECTOR**

☐ **FULL 1 VOLT RMS OUTPUT**

The new Model 160KE is an economical wideband sweep and marker generator which covers a range from 500 KHz–500 MHz in a single continuous sweep. It features the same excellent flatness and linearity characteristics of our 160B and 162A sweepers.

Carefully designed swept RF oscillator circuits yield linearities of better than 1% of straight line at any point across the band. Solid-state amplifiers provide a full 1.0 volt RMS output with flatness better than 0.3 db throughout the range. A precision 82.5 db step attenuator offers increments of 0.5 db. Harmonic and spurious products are at least 35 db down.

Unlike the previous Kay models, the 160KE eliminates the optional plug-in marker system. It provides, however, as a low cost option, a continuously variable calibrated pulse marker and up to six harmonic comb markers. The harmonic comb markers are crystal controlled and are accurate to within 0.005%. The variable pulse marker is fired from the baseline and maintains a 1% accuracy. A variable marker input is also provided.

FREQUENCY RANGE: 500 KHz–500 MHz
DIAL ACCURACY: ±4%
SWEEP WIDTH: 500 KHz–500 MHz
LINEARITY: ±1% of straight line
RF OUTPUT: 1.0 volts into 50 or 75 ohms
FLATNESS: ±0.3 db overall
HARMONIC AND SPURIOUS CONTENT: >35 db down
ATTENUATION: 0–82.5 db in 0.5 db steps
ATTENUATION ACCURACY: 1.0 db
(At Full Attenuation)
SWEEP MODES: Line lock, variable 0.01–100 Hz, manual, external FM

RESIDUAL FM: 4 KHz
DRIFT: Short term, ±100 KHz (5 min)
Long term, ±500 KHz
MARKERS (Opt.): 10 MHz and 50 MHz harmonic birdie comb
500 KHz–500 MHz variable pulse
Up to 6 customer specified birdie combs
POWER REQUIREMENTS: 115 VAC @ 25W
WEIGHT: 28 lbs.

PRICE: $1095.00

Standard marker package includes 10 and 50 MHz harmonic combs plus variable pulse — $200.00

Customer specified harmonic combs — $55.00

160B 1 MHz—600 MHz SWEEP

☐ **FULL 1.0 VOLT OUTPUT**

☐ **EXCELLENT FLATNESS AND LINEARITY**

☐ **VERY LOW HARMONICS AND SPURIOUS**

For design and testing of extended range VHF amplifiers and converters and also of associated passive devices, the new Model 160B features full width sweep coverage from 1 to 600 MHz. An extension of our popular 159E, 300 MHz sweep generator, this wider range version yields a full one volt output into 50 or 75 ohms and is flat to better than ±0.25 db overall.

The frequency of the 160B is selected by a calibrated, three place digital control. The readout itself is marked at 100 KHz intervals for convenient setting of both CW and sweep center frequencies. Sweep width is variable from full 600 MHz down to zero and is indicated on the front panel.

Like the 159 series, the 160B offers a variety of sweep functions including line lock, 0.01—1000 Hz variable rates, CW, external modulation, and a manual sweep. RF output circuits include a precision 99 db step attenuator, 6 db variable level control, plug-in RF detector and an RF meter.

Markers for various applications are available as low cost plug-ins. PM7660 offers harmonic comb markers up to 600 MHz. PM600 features two variable pulse markers plus harmonic comb calibrators at 5 and 50 MHz intervals. Variable birdie markers are also offered for the Model 160B.

FREQUENCY RANGE: 0.5—600 MHz
SWEEP WIDTH: 0—600 MHz
RF OUTPUT: 1 VRMS
FLATNESS: ±0.25 db
HARMONIC AND SPURIOUS DISTORTION: >35 db down
RF ATTENUATOR: 99 db in 3 db steps, Plus 6 db variable
ATTENUATOR ACCURACY: ±1.0 db
(At Full Attenuation)
DIAL ACCURACY: 1%
LINEARITY: (as % of straight line) 1%
EXTERNAL FM: ±6 volt p-p, dc—20 KHz signal for full sweep width
EXTERNAL AM: 70% at 5 KHz, 50% at 10 KHz
DRIFT, SHORT TERM: (5 min) 100 KHz
DRIFT, LONG TERM: (with 2 min settling time) 500 KHz
RESIDUAL FM: 4 KHz
SWEEP MODES: Line lock, 0.01—1000 Hz variable, Ext. MOD, CW, manual
BLANKING: Switchable zero volt reference during retrace
OPTIONAL MARKER PLUG-INS: PM7661, PM7660, PM7670, PM600
POWER REQUIREMENTS: 115 VAC @ 25W
WEIGHT: 25 lbs.
PRICE: $1295.00

162A 1 MHz—1000 MHz SWEEP

☐ **FULL RANGE IN ONE SWEEP**

☐ **STABLE NARROW SWEEPS**

☐ **EXCELLENT LINEARITY AND FLATNESS**

Kay Elemetrics' new Model 162A sweep and marker generator combines the excellent features of a full 1000 MHz wide sweep along with a fine touch, three place, digital frequency readout. This "class-by-itself" sweeper utilizes the variable center frequency and switched-variable sweep width controls to provide an accurate, easy-to-set, swept display.

The generator itself is a voltage controlled oscillator which provides a full 0.5 V RMS output into 50 or 75 ohms over its entire range. Following the proven design characteristics of the Kay 159E VHF sweep generator the 162A maintains a flat ±0.5 db output over the entire 1000 MHz range with an even flatter response overproportionally narrower bandwidths. The output circuits feature a precise 0—80 db, 1 db rotary-step attenuator, a 10 db variable level control, an RF output meter and plug-in RF detector. In addition to its internal locked mode, the 162A may be swept at internal rates of 0.01—100 Hz, and also includes CW, external FM and manual sweep functions.

A variety of optional marker plug-ins are available. The PM7661A provides harmonic comb markers at switchable 1, 10, 100 MHz intervals over the entire range of the sweep. The PM1000 module features twin variable pulse markers plus individually controlled 5 and 50 MHz harmonic combs.

FREQUENCY RANGE: 1—1000 MHz
SWEEP WIDTH: 0—1000 MHz
RF OUTPUT: 0.5 VRMS
FLATNESS: VHF ±0.25 db, UHF ±0.25 db, Overall ±0.5 db
HARMONIC AND SPURIOUS DISTORTION: >30 db down
RF ATTENUATOR: 80 db in 1 db steps, Plus 10 db variable
ATTENUATOR ACCURACY: ±2 db
(At Full Attenuation)
DIAL ACCURACY: 1.5%
LINEARITY: (as % of straight line) 1.5%
EXTERNAL FM: ±6 volt p-p, dc—20 KHz signal for full sweep width
EXTERNAL AM: 70% at 5 KHz, 50% at 10 KHz
DRIFT, SHORT TERM: (5 min) 250 KHz
DRIFT, LONG TERM: (with 2 min settling time) 750 KHz
RESIDUAL FM: 10 KHz at 100 MHz, 2.5 KHz at 1000 MHz
SWEEP MODES: Line Lock, 0.01 — 100 Hz variable, Ext. MOD, CW, manual
BLANKING: Switchable zero volt reference during retrace
OPTIONAL MARKER PLUG-INS: PM7661, PM7670 (VHF only) PM1000
RESIDUAL FM: 10 KHz @ 100 MHz, 2.5 KHz @ 1000 MHz
POWER REQUIREMENTS: 115 VAC @ 25W
WEIGHT: 25 lbs.

PRICE: $1495.00

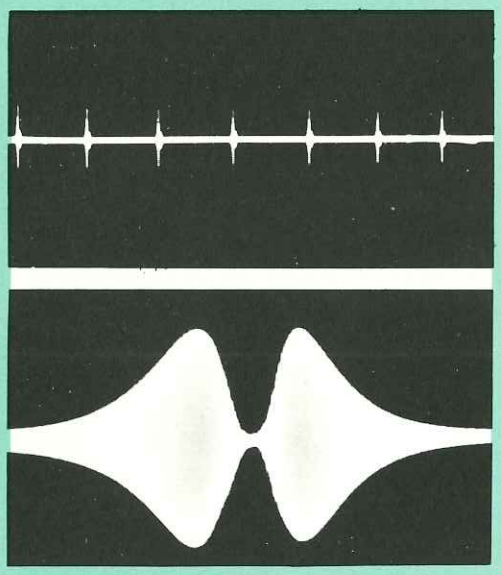
9060/9062 MINI SWEEPS

The 9060 and 9062 offer all of the features of extended range sweepers while adding the convience of a miniature format. They cover 0.5–500 MHz and 1–1000 MHz respectively, in one sweep. This means, wide bandwidth testing, uninterrupted by the nuisance of band switching and recalibration.

Both of these sweepers give you the whole picture, by this we mean, the detected output can be read as you would a graph. The RF sweep, when passed through the device under test detected and displayed on an oscilloscope, produces a ground reference envelope that conforms to the frequency and level characteristics of the test device. This means a lot when checking vital system components in terms of maintenance, new equipment evaluations or incoming inspections.

	9060	9062
FREQUENCY RANGE	500 KHz–500 MHz	1–1000 MHz
DIAL ACCURACY	±4%	±1.5%
SWEEP WIDTH	500 KHz–500 MHz	0–1000 MHz
LINEARITY (as a % of a straight line)	±1% of straight line	±1.5% of straight line
RF OUTPUT:	1.0 VRMS into 50 or 75 ohms (60 dbmv)	0.5 VRMS into 50 or 75 ohms (30 dbmv)
FLATNESS	±0.3 db overall	VHF ±0.25 db, UHF ±0.25 db, ±0.5 db overall
HARMONIC AND SPURIOUS DISTORTION	>35 db down	>30 db down
ATTENUATION	0–20 db var and 70 db 10 db steps	0–20 db var and 70 db 10 db steps
ATTENUATION ACCURACY (At Full Attenuation)	2% of indicated db	5% of indicated db
SWEEP MODES	CW, variable 0.01–100 Hz, external FM	CW, variable 0.01–100 Hz, external FM
RESIDUAL FM	4 KHz	10 KHz at 100 MHz, 2.5 KHz at 1000 MHz
SCAN RATE	2–5 ms	2–5 ms
DRIFT, Short Term	±100 KHz (5 mins)	±250 KHz (5 mins.)
DRIFT, Long Term	±500 KHz (with 3 min settling time)	±750 KHz (with 2 min. settling time)
POWER REQUIREMENTS	115 VAC @ 25W	115 VAC @ 25W
WEIGHT	11 lbs.	11 lbs.
DIMENSIONS (W-H-D)	8 3/8 x 5 3/4 x 13 7/8 inches	8 3/8 x 5 3/4 x 13 7/8 inches
PRICE	$1150.00 45.00 optional detector	$1395.00 45.00 optional detector

PM7660/PM7661 BIRDIE MARKER PLUG-INS



For marking of Kay wideband sweepers, a series of modular birdie marker systems is available. These plug-ins provide both single frequency markers and/or harmonic comb multiples from 500 KHz to 1000 MHz. Both single frequency and harmonic markers are generated by a crystal controlled oscillator which develops a shaped beat frequency indicator as shown on this page.

All markers are customer specified and held to 0.005% crystal accuracy. Like the pulse markers, they may be switched individually, are available separately and do not interfere with the response of the device under test. The birdie type of marker, however, is generally 25–50 KHz in width and, therefore, is not recommended for extremely narrow band sweep testing. All marker oscillators are modular in design and may interchanged or added to the plug-in at any time.

	PM7660	PM7661
MARKER TYPE:	Single and/or Harmonic Birdie	Harmonic Birdie
ACCURACY:	0.005%	Harmonic Birdie
FREQUENCY RANGE:	500 KHz–1 GHz	1 MHz–1.5 GHz
MAX. NUMBER OF MARKERS:	8 Single, 7 Harmonic	1, 10, 100 MHz Harmonic
SWEEP GEN, COMPATIBLE:	159E, 160B, 162B	1, 10, 100 MHz Harmonic
PRICE:	$50 plus $45 per single freq. and/or $55 per harmonic	$250

PM7650 PULSE MARKER
PM7670 VARIABLE CW MARKER

The PM7650 is designed for accurate narrow and pulse marking of the 154, 159, 160 & 162 sweep generators. The markers are developed as extremely sharp frequency indicators on the RF trace. Their width is a fixed percentage of the overall horizontal scope deflection and does not broaden when sweep width is narrowed.

The markers appear at frequencies selected by the customer and may be individually switched. They are especially useful for marking IF frequencies, channel frequencies, and filter bandpass frequencies.

FREQUENCIES: 1–100 MHz up to 8 markers at customer specified frequency.*
MARKER TYPE: Crystal generated pulse
PRICE: $100.00
plus $35.00 per pulse marker specified

*Standard set includes 2, 5, 10, 15, 20, 40, 60 & 80 MHz markers @ $245.00

The PM7670 is a wide range, fundamental frequency, variable birdie marker plug-in, for use with the 159E. It also may be supplied as a separate portable unit, self-contained, in the MR76.

A six-band, hand calibrated dial monitors frequencies from 300 KHz to 300 MHz which are available from a front panel BNC terminal. A full one volt RMS output is provided for use as a separate CW generator for monitoring of the marker with a frequency counter. As a marker generator, the output signal may be patched to the sweeper marker input. The marker developed is a birdie type which is mixed internally and does not interfere with the circuits under test. In addition to the variable marker, a group of harmonic comb markers are also available at multiples of 10 and 50 MHz. These groups are individually selected by a front panel control. A crystal controlled 4.5 MHz sideband marker is a low-cost addition to the variable function providing an excellent means of identifying sound-picture center frequencies.

FREQUENCY RANGE: 300 KHz–300 MHz
MARKER TYPE: Six band variable "Birdie" marker – 10 & 50 MHz harmonic.
OPTIONAL: 4.5 MHz variable sideband marker MR76 self-powered case.
PRICE: $440.00
4.5 MHz Marker $ 55.00
MR76 $100.00

PM300/PM600/PM1000 BIRDIE/VARIABLE PULSE MARKERS

☐ TWIN VARIABLE PULSE MARKERS

☐ TWO HARMONIC BIRDIE CALIBRATORS

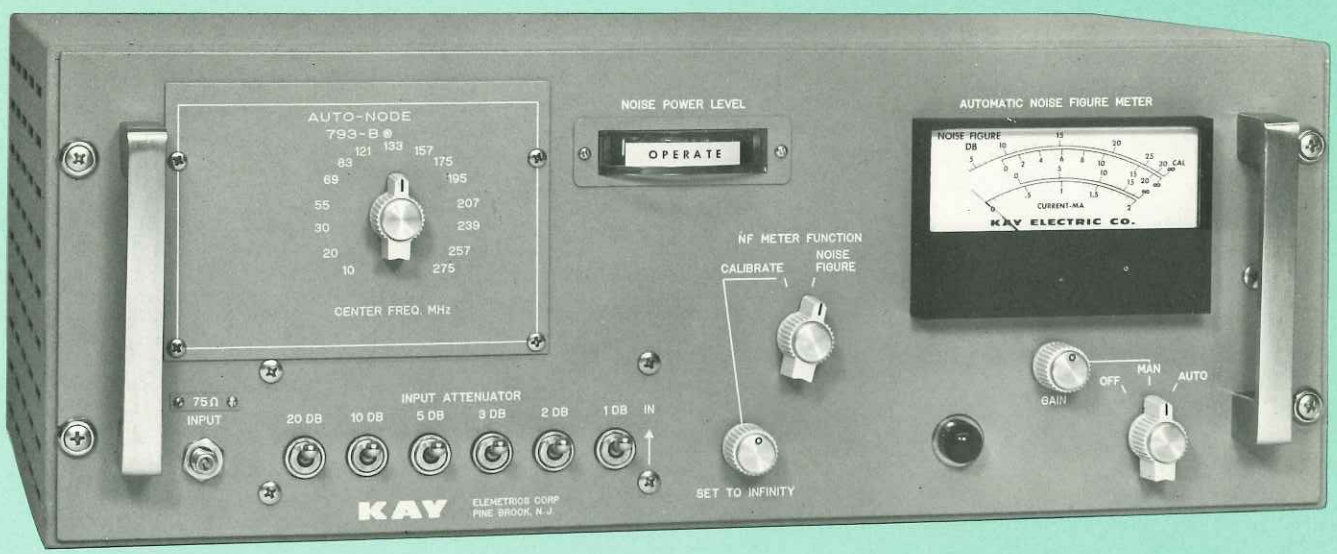
☐ DIGITAL FREQUENCY READOUTS

A series of new variable pulse marker plug-ins are available for use with Kay Models 154C, 159E, 160B, and 162B wideband sweepers. These modules provide two variable pulse markers which are triggered from the base line and intersect the response trace. Both markers are controlled by three place, digital frequency readouts and have individual level controls.

In addition, two harmonic marker combs provide ±0.005% crystal accurate indicators for use as calibration checkpoints. In this manner the dial tracking of the twin variable markers may be held to within ±1% of the calibration range. A dial scale magnifier increases both readability and settability by a factor of ten. In addition to frequency markers, the variable markers may also be used as amplitude calibrators. When measuring 3 db down points, for example, the sweep output attenuator may be used to calibrate the marker levels. The markers may then be adjusted to exactly intersect the trace of the slope. The frequencies may then be recorded and bandwidth interpreted.

	PM300	PM600	PM1000
MARKER TYPE	Dual Variable Pulse		
FREQUENCY RANGE	DC–300 MHz	DC–600 MHz	DC–1000 MHz
ACCURACY	±1% of calibration range		
CALIBRATION	1 & 10 MHz Harmonic	5 & 50 MHz Harmonic	
SWEEP GEN., COMPATIBLE	159E	160B	162B
PRICE	$395.00		

792B/793B AUTOMATIC NOISE FIGURE METER



- ☐ **SWITCHED CHANNELS FOR CATV TESTING (793B)**
- ☐ **SIMPLE FRONT PANEL CALIBRATION**
- ☐ **DIRECT READING IN NOISE FIGURE**

Model 792B and 793B Automatic Noise Figure Meters offer complete packages including the all solid-state automatic noise figure meter and the broad band source.

Primarily focused on the range from DC–1000 MHz, these instruments provide better accuracy and greater flexibility at considerably less cost than conventional noise generators. The 7921B solid-state hot wire noise source yields 6 db excess noise outputs over the DC–1 GHz range. The noise figure is calculated and displayed on the front panel meter which is calibrated from 0–20 db.

In the Model 792B, the IF is continuously tuned from 10–250 MHz; the 793B offers 15 preset CATV channels and subchannels between 10 and 275 MHz. A 41 db precision input attenuator and a 40 db AGC is provided.

The 793B offers alternate channels at slight additional cost. Another low cost option is the inclusion of a 0–4 db full scale meter which may be purchased with either the 792B or 793B (Specify option FE).

FREQUENCY
793B: 15 Channels at 10, 20, 30, 55, 67, 83, 121, 133, 157, 175, 195, 211, 239, 257, and 275 MHz (optional channels available)
792B: 10–250 MHz continuously variable
BANDWIDTH: 6 MHz minimum
IMPEDANCE: 50 or 75 ohms, type F or BNC (specify)
RANGE AND SENSITIVITY: 0 to –70 dbm, 35 db gain required after 6 db source

ATTENUATOR: 0–41 db in 1 db steps
AGC RANGE: 40 db
NOISE FIGURE METER RANGE: 0–20 db standard [0–4 db optional (FE)]

PRICE: 793B – $990
792B – $840
7921B – $150

WIDEBAND RF AMPLIFIERS

□ SOLID-STATE UNITS □ HIGH GAIN AMPLIFIERS □ HIGH OUTPUT AMPLIFIERS

A series of compact, lightweight, wideband amplifiers is now available for general purpose lab applications in the Video thru UHF Ranges. Each of these models features low noise and excellent gain-bandwidth parameters. The fine frequency response characteristics of this series makes for low-cost pre-amps for counters, scopes, spectrum analyzers, etc. Other high output models are offered as excellent companion units for Kay sweep generators or other signal sources.

For high impedance applications in the VHF region, the Model 965A broadband, low loss probe is available. In addition to these amplifiers, the 965A is also designed to work with the 792B and 793B automatic noise figure meters and the Model 1025C log amplifier.

	1022A	1022BPF	1023A	1024B	1026B	1027A	1028A
FREQUENCY RANGE	50 KHz–8 MHz	200 KHz–110 MHz	1 KHz–150 MHz	200 Hz–300 MHz	200 KHz–300 MHz	250 KHz–600 MHz	1 MHz–1000 MHz
GAIN	34 db	30 db	40 db	30 db	20 db	30 db	30 db
FLATNESS	± 0.25 db	± 1 db	± 1 db	± 0.5 db to 1 KHz ± 3 db to 200 Hz	± 0.5 db	±0.6 db	±0.6 db
MAXIMUM OUTPUT	15 VRMS	5 VRMS	0.5 VRMS	0.5 VRMS	3 VRMS	0.7 VRMS	0.7 VRMS
VSWR	< 1.2:1	< 1.2:1	< 1.3:1	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1
IMPEDANCE	50 ohms or 75 ohms	50 ohms or 75 ohms	50 ohms or 75 ohms	50 ohms or 75 ohms	50 ohms or 75 ohms	50 ohms or 75 ohms	50 ohms or 75 ohms
PRICE	$525	$495	$320	$315	$395	$345	$390

1025C VHF LOGARITHMIC AMPLIFIER

☐ 20 KHz–220 MHz COVERAGE ☐ 80 DB LOG RANGE ☐ BUILT-IN LINEAR AMPLIFIER

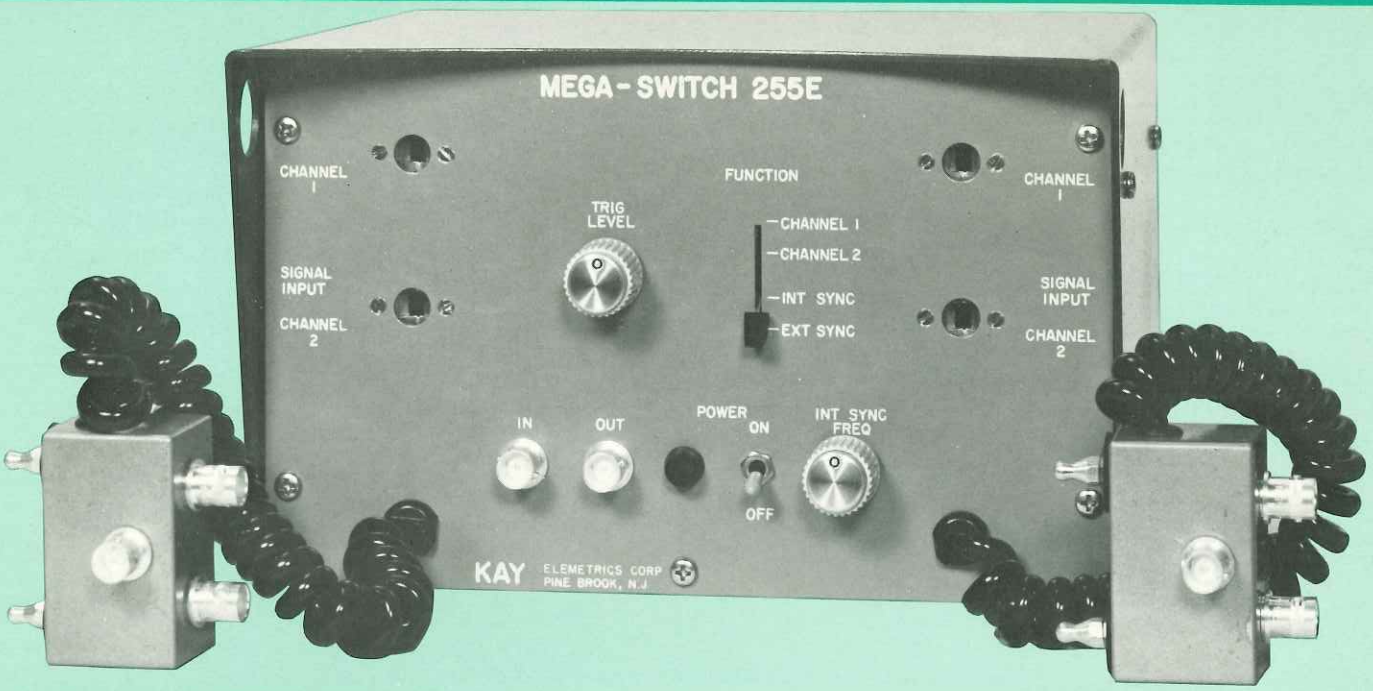
The 1025C gives overall response, and at the same time gives detailed, easily seen measurements of points on the curves as far down as 80 db. The unit permits highly accurate viewing of the skirts and sharp slopes of bandpass filters, single side-band filters, traps, etc. A control gives expansion of the top critical points simultaneously with the log display. 80 db log range, also available as undetected RF signal.

The 1025C is a "setup" type of unit, providing internal switching to set up either the full band of 30 KHz to 220 MHz, or a faster responding band of 200 KHz to 220 MHz. The low, 20 KHz bottom limit of the full range band imposes a slower time constant on the log system; and the choice of bands is provided for easiest operation. Both bands are designed primarily for use in sweep generator or accurately presented swept-frequency response. The 1025C is not intended for fast pulse log applications. The Logafier provides its accurate, 80 db log range over a full 20 KHz to 220 MHz flat, broad, frequency band. In addition, the 80 db log range is available as undetected RF signal as well as detected or metered. The 1025C functions as a true linear RF amplifier to provide 52 db of gain over its full frequency range. When used with a sweeping oscillator equipped with a manual sweep control, the panel meter can be utilized as an accurate db reading voltmeter easily correlated with frequency counter measurements.

FREQUENCY RANGE: 20 KHz – 220 MHz
FLATNESS: 500 KHz – 100 MHz, ±0.5 db
20 KHz – 220 MHz, ±1.0 db
LOGARITHMIC ACCURACY: ±2 db
DYNAMIC RANGE: Full scale 40, 60, or 80 db
LINEAR GAIN: 52 db
INPUT SIGNAL: 0.5 Volts for 80 db
0.16 Volts for 60 db
0.05 Volts for 40 db

TOP EXPAND CONTROL: Variable over 0 to 10 db range.
INPUT IMPEDANCE: 50 ohms, equipped for 965A high impedance probe.
OUTPUT LOAD: 50 ohms
POWER REQUIREMENTS: 115 VAC @ 35W
WEIGHT: 23 lbs.
PRICE: $895.00

255E ELECTRONIC SWITCH



☐ NEW PIN DIODE SWITCHING ☐ COVERAGE TO 1000 MHz ☐ LOW VSWR

For testing of both active and passive CATV devices, the Kay Model 255E RF switch is now available in 75 ohm characteristic impedance.

The 255E may be used for comparison tests of ne DC-1000 MHz region. nput and output modules om the main unit directly er test, eliminating excess d facilitating overall test- ted individually or mixed ed "dual-trace" measure- y be switched at external z; an internal sync feature etween 5—100 Hz.

NAME _____

DEPT. _____

FIRM _____

ADDRESS _____

CITY & STATE _____ ZIP _____

1025C VHF LOGARITHMIC AMPLIFIER

☐ 20 KHz–220 MHz COVERAGE ☐ 80 DB LOG RANGE ☐ BUILT-IN LINEAR AMPLIFIER

The 1025C gives overall response, and at the same time gives detailed, easily seen measurements of points on the curves as far down as 80 db. The unit permits highly accurate viewing of the skirts and sharp slopes of bandpass filters, single side-band filters, traps, etc. A control gives expansion of the top critical points simu
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FREQUENCY RANGE: 20 KHz -
FLATNESS: 500 KHz – 100 MHz
20 KHz – 220 MHz
LOGARITHMIC ACCURACY: ±2
DYNAMIC RANGE: Full scale 40
LINEAR GAIN: 52 db
INPUT SIGNAL: 0.5 Volts for 80
0.16 Volts for 6
0.05 Volts for 4

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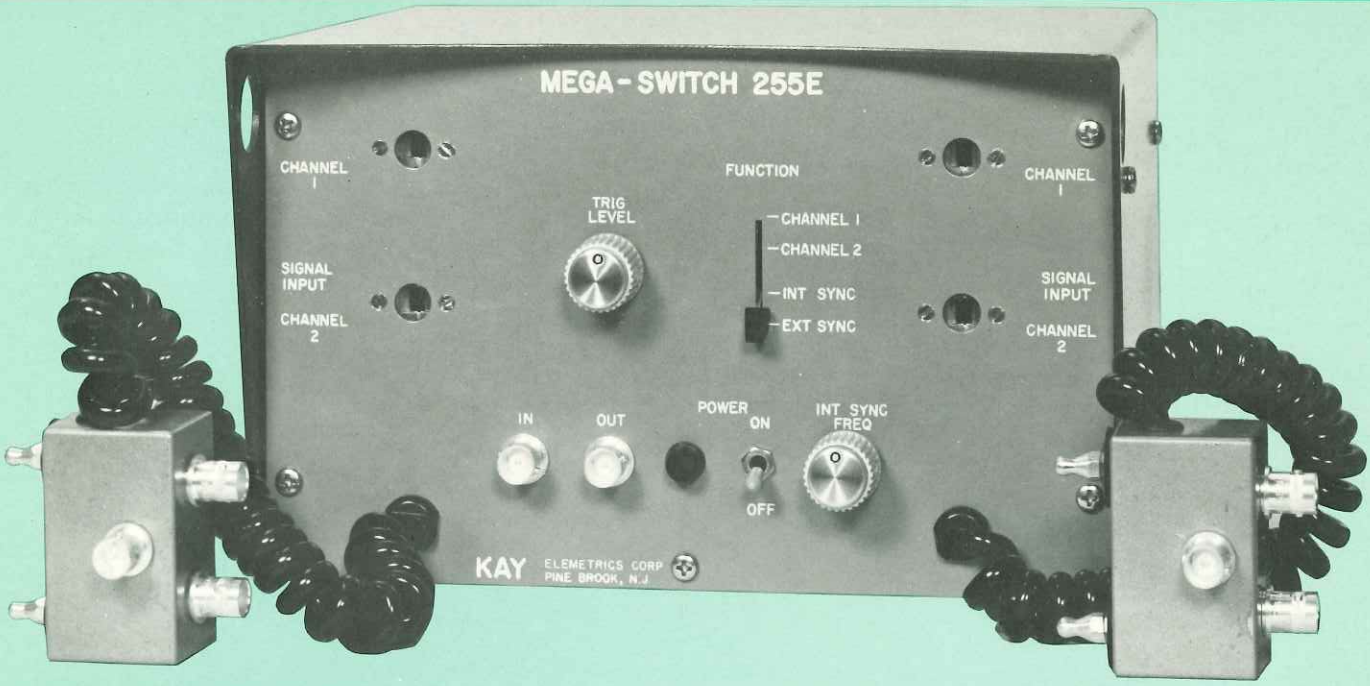
PINE BROOK, NEW JERSEY 07058
ATTENTION: JIM CONNORS, SALES MGR.

255E ELECTRONIC SWITCH



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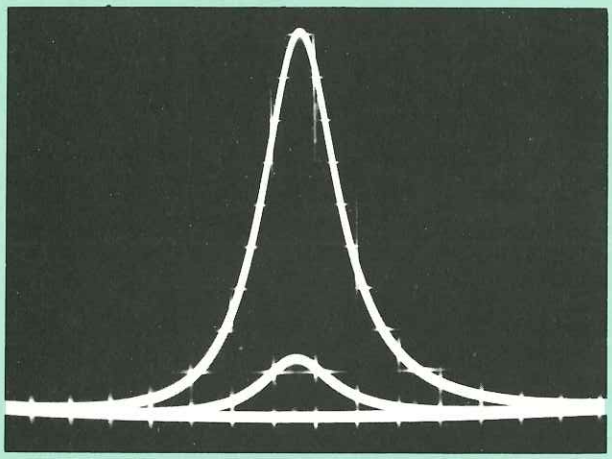
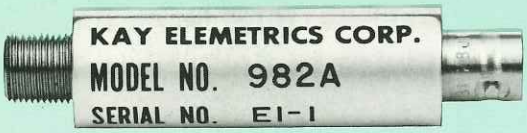


For testing of both active and passive CATV devices, the Kay Model 255E RF switch is now available in 75 ohm characteristic impedance.

The 255E may be used for comparison tests of frequency responses in the DC-1000 MHz region. It features dual channel input and output modules which may be brought from the main unit directly to the point or points under test, eliminating excess cabling discontinuities and facilitating overall testing. Channels may be selected individually or mixed at the output for combined "dual-trace" measurements. The instrument may be switched at external rates of from 0.2–200 Hz; an internal sync feature is also provided for rates between 5–100 Hz.

FREQUENCY RANGE: 5–1000 MHz
VSWR: 1.2:1 Overall
CROSSTALK: >50 db down
SWITCHING RATE: External sync – 0.2 to 200 Hz
Internal sync – 20 to 100 Hz
IMPEDANCE: 50 or 75 ohms (specify)
CONNECTORS: BNC, TNC or F (specify)
POWER REQUIREMENTS: 115 VAC @ 8W
WEIGHT: 11 lbs
PRICE: $295.00

DETECTORS



SPECIFIED FREQUENCY RANGE: DC to 1.5 GHz
FLATNESS: ±0.25 db
USABLE FREQUENCY RANGE: DC to 2.4 GHz
INPUT IMPEDANCE: All 75 ohm with exception of B982A which is 50 ohm.
VSWR: 1.03:1
EFFICIENCY, VRMS TO VDC: 80%
CONNECTOR TYPE: **PRICE:** $45.00

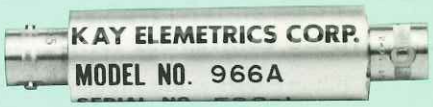
This new series of RF detectors are compact, ultra flat D.C. to 1.2 GHz units. Along with the ±0.25 db response, they all offer VSWR's of better than 1.05:1 and an extended, usable, frequency limit of 2.4 GHz. These low cost detectors are available with a selection of 75 and 50 ohm connectors in various input and output combinations. They are essential for the testing of wideband amplifiers, filters, AM demodulation, and any number of other active or passive devices, where a graphic interpretation of response is needed.

	F982A	FB982A	B982A	C982A
Input	Type "F"	Type "F"	BNC	BNC (75 ohm)
Output	Type "F"	BNC (50 ohm)	BNC	BNC (75 ohm)

MATCHING PADS

	MP966A	MP967A
FREQUENCY RANGE	300 KHz–750 MHz	40–1000 MHz
INSERTION LOSS	300 KHz–400 MHz 0.25 db 400 to 750 MHz 0.5 db	40–400 MHz 0.25 db 400 to 1000 MHz 0.5 db
VSWR	1.12:1	1.12:1
CONNECTOR TYPE	BNC Type "F"	BNC Type "F"
OPTIONAL	TNC, Series 27 75 ohm BNC	
PRICE	$35.00	

Matching Pads are designed for situations where a 50 or 75 ohm test instrument is utilized in a hook-up of 75 or 50 ohms.



RETURN LOSS BRIDGES

These compact, precision bridges are designed to provide a straight forward method of determining return loss in active or passive devices.

	986A (optional on all P9030 Models)	987A (standard with P9030ADR)	989A (standard with P9030A)
FREQUENCY RANGE	DC–1 GHz	10–500 MHz	20–500 MHz
IMPEDANCE	75 ohms		
RETURN LOSS, MINIMUM	1.1:1	1.02:1	1.03:1
SENSITIVITY	+1 mV DC output for a 1.1:1 SWR @ 1.0 VRMS input	+1 mV DC output for a 1.02:1 SWR @ 1.0 VRMS input	+1 mV DC output for a 1.03:1 SWR @ 1.0 VRMS input
MAX. RF INPUT	3 VRMS		
PRICE	$150.00		

PRECISION 75 OHM ATTENUATORS

In-Line Toggle Switch models are available in various attenuation increments. They feature Kay's own high frequency teflon toggle switches and precision 1% carbon film resistors. The use of broad tuned shielded compartments provide a high accuracy and flat frequency response.

Miniature Toggle Attenuator models also utilize the Kay teflon mini-toggle switches. They offer the same high quality attenuation values as the standard versions, however, their smaller overall size is designed to meet tighter behind-the-panel requirements. Weighing only 8 oz, they are light enough to be installed in a cable system.

Kay's Standard Rotary models adapt the pi pad design of the toggle switch versions to rotary configuration. Printed circuit techniques have been employed for high frequency switching with long life contacts. These 75 ohm models cover frequencies ranging to 1000 MHz.

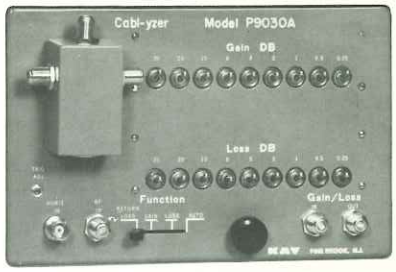
Miniature Rotaries are now available for portable test equipment packages. Featuring the superb high-frequency, high accuracy characteristics of the standard rotary models, this series may be mounted in areas less than 1-1/2" in diameter.

MODEL		442D	441-C	1/442-C	470-A	444-A	445-A	446-B	1/445A
ATTENUATION RANGE		0-101 DB In 1 DB steps	0-41 DB In 1 DB steps	0-22.1 DB in .1 DB steps	0-132 DB In 1 DB steps	0-99 DB In 1 DB steps	0-10 DB In 1 DB steps	0-70 DB In 10 DB steps	0-1 DB In .1 DB steps
FREQUENCY (MHz)		DC-500	DC-500	DC-500	DC-500	DC-500	DC-1000	DC-1000	DC-500
CONTROLS		In-line toggle switches	In-line toggle switches	In-line toggle switches	Miniature In-line toggle switches	Rotary-Digital	Rotary-Step	Rotary-Step	Rotary-Step
TYPICAL OVERALL ACCURACY (±DB) OR % OF INDICATED DB	DC-250 MHz	1.0	0.5	5%	1.0	1.0	0.2	2%	.025
	250-500 MHz	2.0	1.2	—	2.0	2.0	0.2	2%	.025
	500-1000 MHz	—	—	—	—	—	0.4	5%	—
MAXIMUM VSWR	DC-250 MHz	1.2:1	1.2:1	1.4:1	1.2:1	1.2:1	1.2:1	1.2:1	1.2:1
	250-500 MHz	1.4:1	1.4:1	—	1.4:1	1.4:1	1.2:1	1.2:1	1.2:1
	500-1000 MHz	—	—	—	—	—	1.25:1	1.3:1	—
INSERTION LOSS TYPICAL (DB)	DC-250 MHz	<.1	<.1	.1	<.1	<.1	<.2	<.2	<.2
	250-500 MHz	<.2	<.2	—	<.2	<.2	<.2	<.2	<.2
	500-1000 MHz	—	—	—	—	—	<.3	<.4	—
POWER (watts)		.5	.5	.5	.5	.5	.5	.5	.5
DIMENSIONS (inches)		2 x 9¾ x 2	2 x 7 x 2	2 x 9¾ x 2	1¼ x 6¼ x ⅞	2¼ x 2 x 5¾	2 Dia. x 2⅛	2 Dia. x 2⅞	2 Dia. x 2⅛
PRICE		**$99**	**$80**	**$99**	**$145**	**$240**	**$90**	**$90**	**$90**

455-3

The performance is in the proof.

The P9020A



The P9030A

The P9040A

The P9059A

And the proof is faster, easier, more economical with Kay's modular solid-state CATV test set.

The new Kay Series 9000 CATV test set offers a completely new approach to system testing: a basic storage scope main frame with low cost plug-ins for summation sweep testing, spectrum analysis, loss and return loss measurements and bench alignment.

The unique design permits the addition of future test modules at relatively low cost with no sacrifice in quality. Add whatever you want, whenever you want it.

The P9020A is a VHF summation sweep receiver. It features a 40 db post amp, a 42 db attenuator, harmonic markers, a built-in detector and a variable tilt control.

The P9030A plugs into the same main frame for measurement of gain, loss and return loss of active and passive devices. It includes precision .25 db attenuators, an electronic switcher, repeatable bridge and RF detector.

The P9040A is a low-cost spectrum analyzer plug-in, covering the range from 500 KHz-300MHz. It offers a 70 db dynamic range, digital IF attenuator, digital center frequency readout and built-in frequency and level calibration.

The P9059A is a low-cost solid-state sweeper plug-in covering the 1-300 MHz range. Designed primarily as a head end sweeper, it may be removed from the head end rack and installed in the main frame for amplifier alignment.

Sweepers • Attenuators • Markers • Switches

KAY CATV Elemetrics Corp

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